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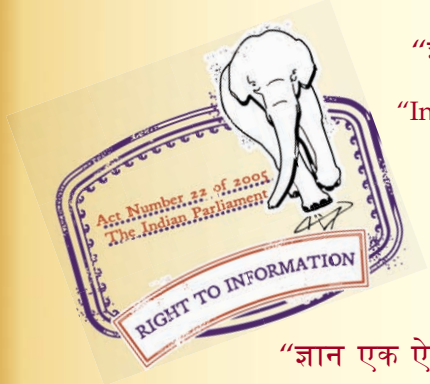
IS 6761 (1994): Fasteners - Countersunk Head Screws with Hexagon Socket [PGD 31: Bolts, Nuts and Fasteners Accessories]



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Bhartṛhari—Nītiśatakam
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IS 6761 : 1994

(Reaffirmed 2004)

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(पहला पुनरीक्षण)

Indian Standard

FASTENERS — COUNTERSUNK HEAD SCREWS WITH HEXAGON SOCKET — SPECIFICATION

(First Revision)

UDC 621·882·215·3

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 1994

Price Group 3

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Bolts, Nuts and Fasteners Accessories Sectional Committee had been approved by the Light Mechanical Engineering Division Council.

As a consequence of the head geometry and the form of the wrench engagement, the critical cross section of the screws covered by this standard is located below the hexagon socket and not in the thread. It is recommended that the screw should not be used for the transmission of high axial loads involving prestressing.

This Indian Standard was first published in 1972. This revision has been made to align the standard with the latest versions of basic standards relating to fasteners.

Following changes have been made in this revision:

a) Property class has been changed from 8.8 to 12.9.

b) Precision grade (P) has been redesignated as Product Grade A in accordance with IS 1367 (Part 2) : 1979.

c) The dimensions of non-preferred sizes have been included and covered under separate table.

d) Screw sizes with fine pitch have been deleted.

e) Dimensions and symbols have been rationalized and aligned with the basic standards on fasteners.

f) Partially threaded screws have been deleted from standard.

In preparation of this standard assistance has been derived from DIN 7991-1986 'Hexagon socket countersunk head cap screws', issued by Deutsches Institut für Normung.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

FASTENERS — COUNTERSUNK HEAD SCREWS WITH HEXAGON SOCKET — SPECIFICATION

(First Revision)

1 SCOPE

This Indian Standard covers the requirements of countersunk head screws with hexagon socket in the size range M3 to M20.

2 REFERENCES

IS No.	*Title*
1367	Technical supply conditions for threaded steel fasteners
(Part 1) : 1980	Introduction and general information (*second revision*)
(Part 2) : 1979	Product grades and tolerances (*second revision*)
(Part 3) : 1991	Mechanical properties and test methods for bolts, screws and studs with full loadability (*third revision*)
(Part 9/Sec 2) : 1993	Surface discontinuities, Section 2 Bolts, screws and studs for special applications (*third revision*)
(Part 11) :	Electroplated coatings (*under preparation*)
(Part 17)	Acceptance criteria (*under preparation*)
(Part 18) : 1979	Marking and mode of delivery (*second revision*)
1368 : 1987	Dimensions for ends of parts with external ISO metric threads (*third revision*)
2614 : 1969	Methods for sampling of fasteners (*first revision*)
4218 (Part 5) : 1979	ISO Metric screw threads: Part 5 Tolerances (*first revision*)
4218 (Part 6) : 1978	ISO Metric screw threads: Part 6 Limits of sizes for commercial bolts and nuts (Diameter range 1 to 52 mm) (*first revision*)
8536 : 1987	Fasteners — Bolts, screws, studs and nuts — Symbols and designation of dimensions (*first revision*)
11362 : 1985	Head configuration and gauging of countersunk head screws

3 TECHNICAL SUPPLY CONDITIONS

Dimensions and preferred length-size combination		Table 1A, Table 1B and Table 2
Permissible Dimensional Deviations and Deviation of form	Product *Grade*	A
	Indian Standard	IS 1367 (Part 2) : 1979
Threads	Pitch	Coarse
	Tolerances	5g6g
	Indian Standards	IS 4218 (Part 5) : 1979 IS 4218 (Part 6) : 1978
Material		Steel[1)]
Mechanical properties	Property Class	12·9 (*see* Note)
	Indian Standards	IS 1367 (Part 3) : 1991[2)]
Head configuration and gauging		IS 11362 : 1985
General requirements		IS 1367 (Part 1) : 1980
Finish		Black oxide Limits for surface discontinuities are covered in IS 1367 (Part 9/Sec 2) : 1993
Sampling and acceptance criteria		IS 1367 (Part 17)[3)]
Marking and mode of delivery		IS 1367 (Part 18) : 1979 IS 1367 (Part 3) : 1991

[1)]Alloy steel is mandatory as the material for screws is of property class 12.9.

[2)]For screws unsuitable for tensile testing, the hardness requirements shall be complied with throughout the section of the screw.

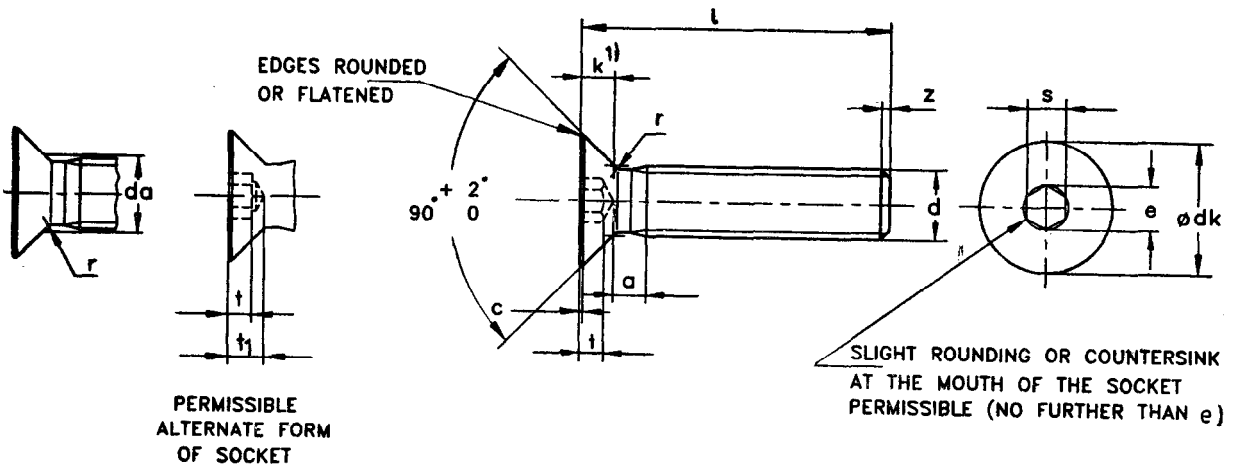
[3)]Under preparation/draft stage. [IS 2614 : 1969 may please be referred till publication of this standard.]

NOTE — Because of their head configuration these screws may not meet the minimum ultimate tensile load for property class 12.9 specified in IS 1367 (Part 3) : 1991 Table 5, when tested in accordance with Test Programme B. They are nevertheless required to meet other material and property requirements for property class 12.9 in IS 1367 (Part 3) : 1991. In addition, when full size screws are loaded with the head supported on suitable collar using the type of testing fixture illustrated in IS 1367 (Part 3) : 1991 Fig. 2, they shall withstand the following loads without fracture:

Thread Size	d	M3	M4	M5	M6	M8	M10	M12	M16	M20
Test Load	N	5220	9100	14800	20900	38100	60300	87700	163000	255000

Table 1A Dimensions for Countersunk Head Screws with Hexagon Socket

(Clause 3)



a = 2·5 *P Max*
e Min = 1·14 *s Min*
z = according to IS 1368 : 1987

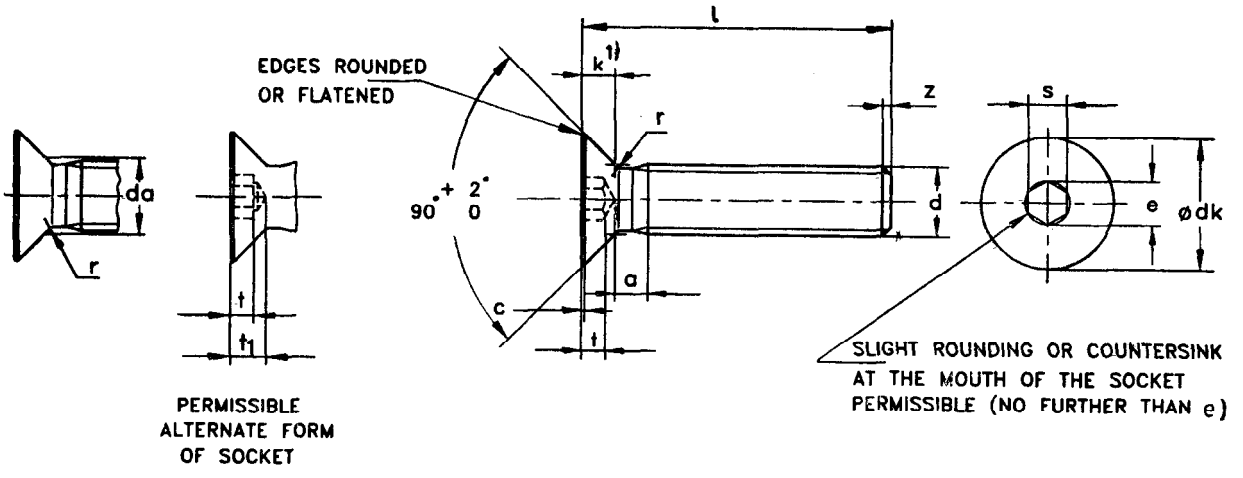
All dimensions in millimetres.

Threads Size *d*	M3	M4	M5	M6	M8	M10	M12	M16	M20
P	0·5	0·7	0·8	1	1·25	1·5	1·75	2	2·5
c Nom	0·2	0·3	0·3	0·3	0·4	0·5	0·5	0·5	0·5
dk *Max*	6	8	10	12	16	20	24	30	36
dk *Min*	5·7	7·64	9·64	11·57	15·57	19·48	23·48	29·48	35·38
k Nom	1·7	2·3	2·8	3·3	4·4	5·5	6·5	7·5	8·5
r Min	0·1	0·2	0·2	0·30	0·5	0·5	1·0	1·0	1·0
da Max	3·6	4·7	5·7	6·8	9·2	11·2	13·7	17·7	22·4
s Nom	2·0	2·5	3·0	4·0	5·0	6·0	8·0	10·0	12·0
s Max	2·1	2·60	3·10	4·12	5·14	6·14	8·175	10·175	12·212
s Min	2·02	2·52	3·02	4·02	5·02	6·02	8·025	10·025	12·032
t *Max*	1·2	1·8	2·3	2·5	3·5	4·4	4·6	5·3	5·9
t *Min*	0·95	1·55	2·05	2·25	3·2	4·1	4·3	5·0	5·6
t_1 *Max*	1·85	2·69	3·18	3·58	4·42	6·01	6·85	8·10	8·70
e Min	2·3	2·87	3·44	4·58	5·72	6·86	9·15	11·43	13·73

1) The head height '*k*' is the distance from head face to the intersection of conical portion of the head with the basic screw diameter.

Table 1B Dimensions for Countersunk Head Screws with Hexagon Socket (Non-preferred Sizes)

(*Clause* 3)



a = 2·5 P *Max*

e *Min* = 1·14 s *Min*

z = according to IS 1368 : 1987

All dimensions in millimetres.

Thread Size d	M14	M18
P	2	2·5
c Nom	0·5	0·5
dk *Max*	27	33
dk *Min*	26·48	32·38
k Nom	7	8
r *Min*	1	1
da *Max*	15·7	20·2
s Nom	10	12
s *Max*	10·175	12·212
s *Min*	10·025	12·032
t *Max*	4·8	5·5
t *Min*	4·5	5·2
t_1 *Max*	7·5	8·4
e *Min*	11·43	13·72

1)The head height 'k' is the distance from head face to the intersection of conical portion of the head with the basic screw diameter.

Table 2 Preferred Length Diameter Combination of Countersunk Head Screws with Hexagon Socket

(*Clause* 3)

All dimensions in millimetres.

NOMINAL LENGTH	M3	M4	M5	M6	M8	M10	M12	(M14)	M16	(M18)	M20
6											
8											
10											
12											
16											
20											
25											
30											
35											
40											
45											
50											
55											
60											
65											
70											
80											
90											
100											

NOTE — Sizes shown in brackets are non-preferred sizes.

4 DESIGNATION

The countersunk head screws with hexagon socket shall be designated by nomenclature, thread size, length and number of this standard.

Example:

A countersunk head screw with hexagon socket of nominal size M10 and length 60 shall be designated as:

Hexagon Socket Countersunk Head Screw

M10 × 60 IS 6761

This Indian Standard has been developed from Doc : No. LMD 14 (0008).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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